

REMARKS

The above amendments to the above-captioned application along with the following remarks are being submitted as a full and complete response to the Office Action dated March 21, 2006 (U.S. Patent Office Paper No. 03102006). In view of the above amendments and the following remarks, the Examiner is respectfully requested to give due reconsideration to this application, to indicate the allowability of the claims, and to pass this case to issue.

Status of the Claims

As outlined above, claims 1-20 stand for consideration in this application, wherein claims 1, 5-8, 13 and 16-20 are being amended to correct formal errors and to more particularly point out and distinctly claim the subject invention.

Additional Amendments

The drawings are being amended to correct formal errors and to better disclose and describe the features of the present invention as claimed. All amendments to the application are fully supported therein. Applicants hereby submit that no new matter is being introduced into the application through the submission of this response.

Formal Objections

Figs. 4-5 were objected to because of informalities. As suggested by the Examiner, Figs. 4-5 are each being amended to include a legend "Prior Art." Accordingly, withdrawal of this objection is respectfully requested.

Prior Art Rejections

The First 35 U.S.C. §103(a) Rejection

Claims 1-4 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Shi (US 2003/0139147) in view of Herdey (US 2003/0098734). This rejection is respectfully traversed for the reasons set forth below.

According to the Manual of Patent Examining Procedure (M.P.E.P. §2143),

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second there must be a reasonable

expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both not be found in the prior art, not in the applicant's disclosure.

Claim 1

The Office Action contends that Shi discloses all the claimed limitations of claim 1 except that Shi fails to disclose that a negative feedback circuit includes an adjustable feedback factor, each negative feedback circuit including a second filter of low-pass type. The Office Action further contends that Herdey discloses a negative feedback circuit for reducing the DC offset, wherein the negative feedback includes an adjustable feedback factor, and a second filter of low-pass type, and that it would have been obvious to one of ordinary skill in the art at the time of the invention to provide the above teaching of Herdey to Shi in order to benefit the advantages of Herdey's invention such as the switching frequency being proportional to the output signal thereby having the characteristics of a pseudo-random signal, contrary to common switched capacitors which generate undesirable noise and reduce the DC offset. Applicants respectfully disagree.

Claim 1 now recites that a direct conversion receiver comprises: a pair of mixers which convert a receive signal frequency to a baseband frequency; and a baseband frequency signal processing block including a pair of first gain control amplifiers and a pair of first filters, following said mixers, wherein said baseband frequency signal processing block further includes a pair of negative feedback circuits with an adjustable feedback factor, each negative feedback circuit including a second filter of low-pass type.

One embodiment of claim 1 is illustrated in Fig. 1. A DC offset occurring in the baseband frequency analog signal processing block is canceled by a negative feedback circuit comprising an amplifier 105 and a low-pass filter 106. When the gain of the gain control amplifier 104 in the baseband frequency analog signal processing block changes, the transfer function of the filter 103 in the baseband frequency analog signal processing block changes, and its frequency characteristics change accordingly. To solve this problem, the product of the gain of the gain control amplifiers 104 in the baseband frequency analog signal processing block and the gain of the gain control amplifiers 105 in the negative feedback circuit should be constant by adjusting the gain of the gain control amplifiers in the negative feedback circuit.

In contrast, Shi merely shows a direct conversion receiver in which a detected DC offset is canceled by mixing a compensation signal generated in a DC offset correction

module with the baseband signal. Shi states that the DC offset correction module monitors the output of the programmable gain amplifiers in the baseband frequency analog signal processing block, detects a DC offset and provides a compensation signal to cancel the detected DC offset. However, as the Examiner admitted, Shi does not show or suggest using the negative feedback circuit with an adjustable feedback factor, which includes a second filter of low-pass type in order to further cancel the DC offset.

Herdey is directed to a direct conversion receiver having an offset correlation analogic circuit with a zero intermediate frequency. However, contrary to the Examiner's allegation, Herdey merely shows that a switched capacitor issues a differential compensation offset signal corresponding to the DC offset generated in a main path and the compensation offset signal is summed to the baseband input signal to cancel the DC offset. Herdey says nothing about that the circuit comprising a negative feedback circuit nor the gain of the amplifier in the negative feedback circuit being adjustable so that the product GB is constant where G and B are the gains of the gain control amplifiers in a baseband frequency signal processing block, respectively (Page 8, lines 16-24 of the specification).

In sum, there is no suggestion or motivation in either Shi or Herdey to combine these features explicitly or implicitly, or in the knowledge generally available to one of ordinary skill in the art at the time the invention was made to embody all the features of the invention as recited in claim 1. Accordingly, claim 1 is not obvious in view of all the prior art recited.

Claims 2-4

As to dependent claims 2-4, the arguments set forth above with respect to independent claim 1 are equally applicable here. The corresponding base claim being allowable, claims 2-4 must also be allowable.

The Second 35 U.S.C. §103(a) Rejection

Claims 5-8 and 13 were rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over Shi in view of Herdey as applied to claim 1, and further in view of the prior art as admitted by applicant in Fig. 5 of the present application. This rejection is respectfully traversed for the reasons set forth below.

As to dependent claims 5-8 and 13, the arguments set forth above with respect to independent claim 1 are equally applicable here. The corresponding base claim being allowable, claims 5-8 and 13 must also be allowable.

Allowable Subject Matter

Applicants thank the Examiner for holding that claims 9-12 and 14-20 would be allowed if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. Applicants acknowledge the Examiner's statement of reasons for allowance as set forth in the Office Action. However, Applicants will point out that the reasons for allowability of the above referenced claims are not limited to the reasons for allowance as set forth in the Office Action.

As to dependent claims 9-12 and 14-20, the arguments set forth above with respect to independent claim 1 are equally applicable here. The base claim being allowable, claims 9-12 and 14-20 must also be allowable in the form of a dependent claim.

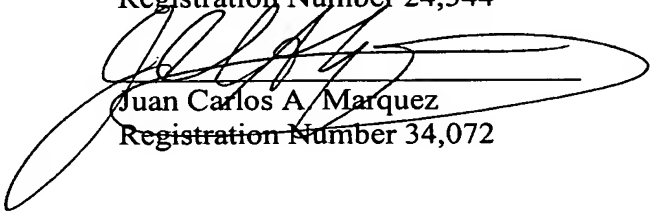
Conclusion

In view of all the above, Applicants respectfully submit that certain clear and distinct differences as discussed exist between the present invention as now claimed and the prior art references upon which the rejections in the Office Action rely. These differences are more than sufficient that the present invention as now claimed would not have been anticipated nor rendered obvious given the prior art. Rather, the present invention as a whole is distinguishable, and thereby allowable over the prior art.

Favorable reconsideration of this application as amended is respectfully solicited. Should there be any outstanding issues requiring discussion that would further the prosecution and allowance of the above-captioned application, the Examiner is invited to contact the Applicants' undersigned representative at the address and phone number indicated below.

Respectfully submitted,

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September 20, 2006
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IN THE DRAWINGS

Please replace Figs. 4 and 5 with the substitute Figs. 4 and 5 attached herewith.